YOUR GUIDE TO GOING SOLAR

A 10 PART GUIDE
TO KICK OFF
YOUR SOLAR JOURNEY

kokosing SOLAR

Kokosing Solar (previously Third Sun Solar) has been helping homeowners and businesses in Ohio and surrounding states since 2000. Our customers feel confident going solar knowing that they have a trusted partner by their side. We bring decades of solar education, engineering, and installation experience to where it matters most – your home.

The shift to clean energy is accelerating quickly as costs have gone down and solar efficiency has gone up. In most places worldwide, solar is now less expensive than any other electric source!

The goal of this guide is to help answer some questions you may have as you begin your solar journey. Help us achieve our shared mission to accelerate the shift to clean energy!

In this guide, you will find:

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WHY SOLAR?

The Sun rises every day. Sunlight is free solar fuel. Solar power offers you --

RELIABILITY

In a world of uncertainty, you can count on the sun always rising. By purchasing a solar power system, you are buying 30+ years of clean, consistent energy. Your solar power system is giving you protection against energy cost inflation, stabilizing your home energy costs.

CONTROL

A solar power system connects to your existing utility meter. Solar provides the same quality of electricity for your house that coal-fired, oil-fired, and nuclear power plants produce regionally. Today, solar power is more affordable, efficient, and reliable than ever. Imagine having the power to make your own electricity!

GREAT INVESTMENT

Gain energy independence and cost predictability for the long term.

With solar, you can have long-term energy savings that grow over time. You can convert your utility bill expense into a wiser investment in your home, your family, and the planet. The Cost of Utility Power varies and can range from about $0.13 – $0.18 per kilowatt-hour. That cost has risen annually by 3 – 6%, and due to global conditions, we know the escalation will only continue to increase. Solar power comes in at roughly $0.05 – $0.07 per kWh over the lifetime of the system. You could be getting your energy at a lower rate when you switch to solar power.

CLEAN & SMART ENERGY

Be a pace-setter, a thought leader, and a great example to your family, friends & neighbors. Solar shows your commitment to making the Earth a smarter and cleaner place now and for our future generations.

Installing solar makes your home worth more over time, by increasing its re-sale value. At the same time, you are demonstrating your earth-friendly values.

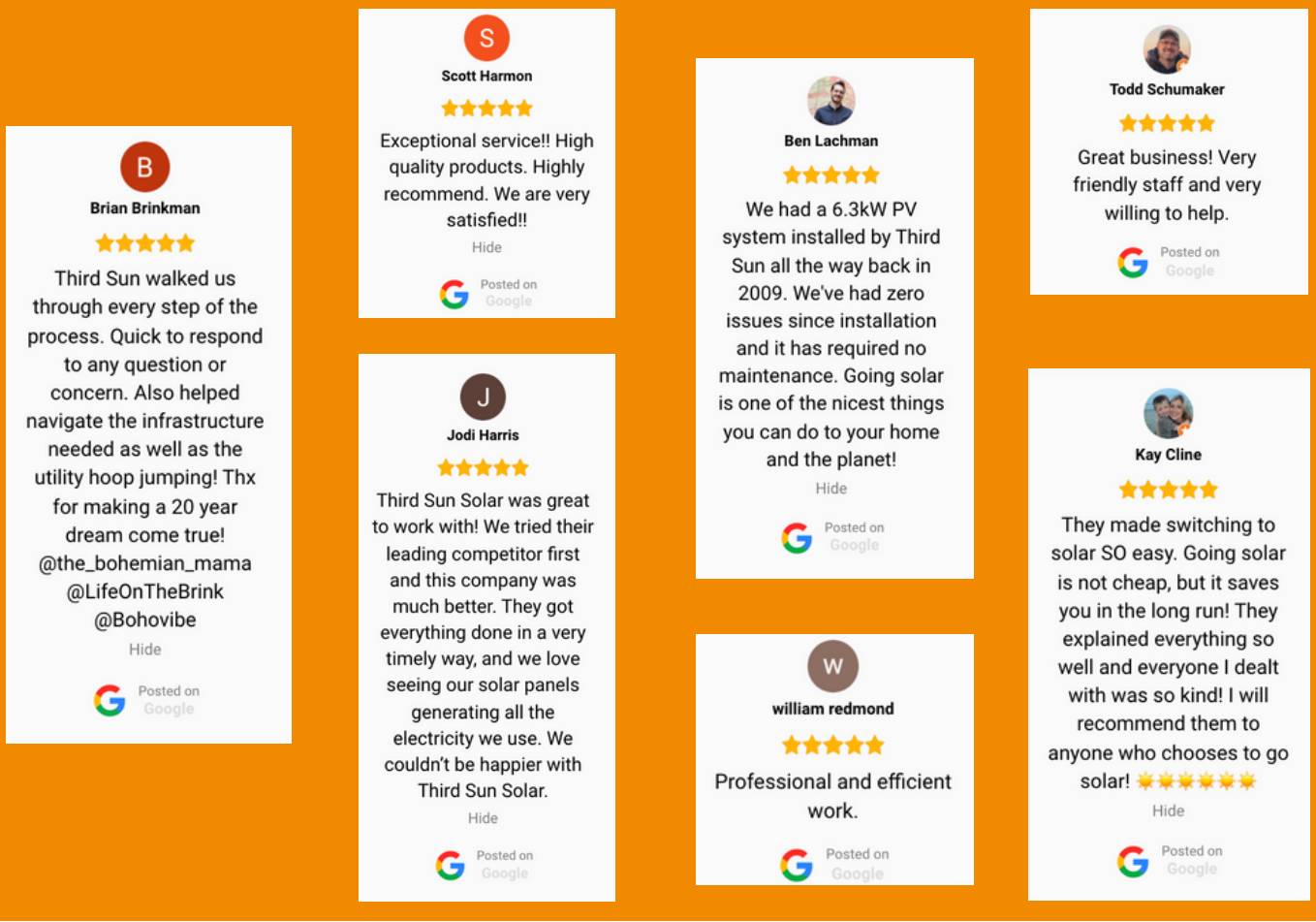
WHY NOW?

Solar panel prices have dropped almost 80% in the past five years, and have now stabilized. The current federal solar tax credits offers further savings and make solar a great return on investment.

According to the latest U.S. Energy Information Administration data, electric power is up 8% nationwide from 2021 and 6% in Ohio. This rise is far beyond the 3% inflation rate we have historically modeled for our customers. As the full cost of fossil fuel continues to rise, people increasingly see solar as the best hedge against rising energy prices. It is the smartest, easiest pathway to energy independence.

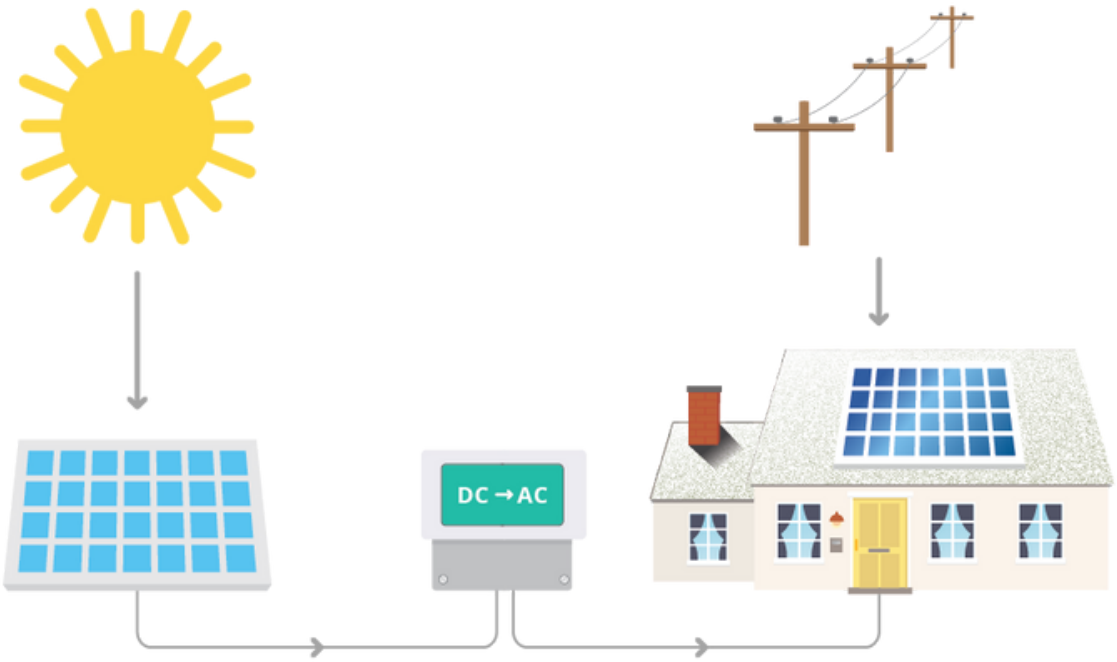
Today's solar panels are highly engineered, have no moving parts, are aesthetically pleasing, and function well for thirty years and more.

Even people who installed solar when panel prices were higher now say they are glad they made the investment. Their utility bill savings have been dramatic, and they see their solar becoming even more valuable to them over time, as utility rates rise.



HOW SOLAR WORKS

Today’s modern solar systems are remarkably simple. When exposed to daylight, solar panels produce electric current. This is passed through a device called an inverter that conditions the power to perfectly match your utility power. Your home will now use solar power first, and the utility is there for nighttime and additional power needs. When your system makes more power than is needed in the home, the excess goes out to the utility grid for a credit. That's when the power company owes you!



POWER VS. ENERGY

If you've heard these terms (kilowatt and kilowatt hour) in the past but don't know what they mean – don't worry about it. You aren't alone. Most ratepayers don't.

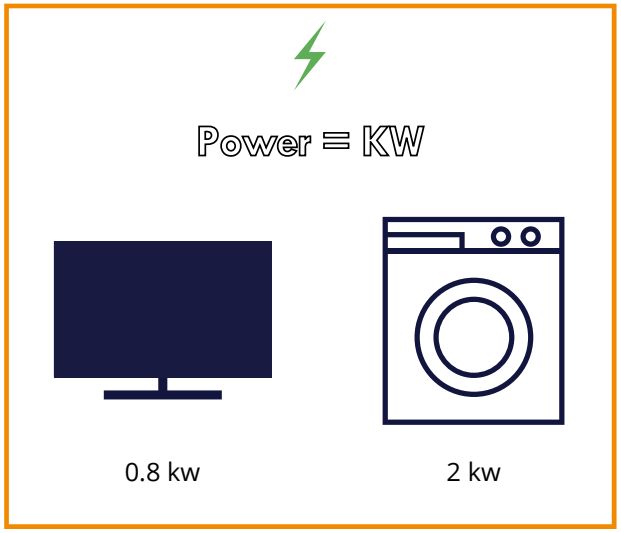
But understanding these concepts, basic energy terms, and the difference between power and energy can save you confusion and stress when looking at and trying to understand your electricity bill. You'll also be able to make a more informed decision when you start exploring solar energy.

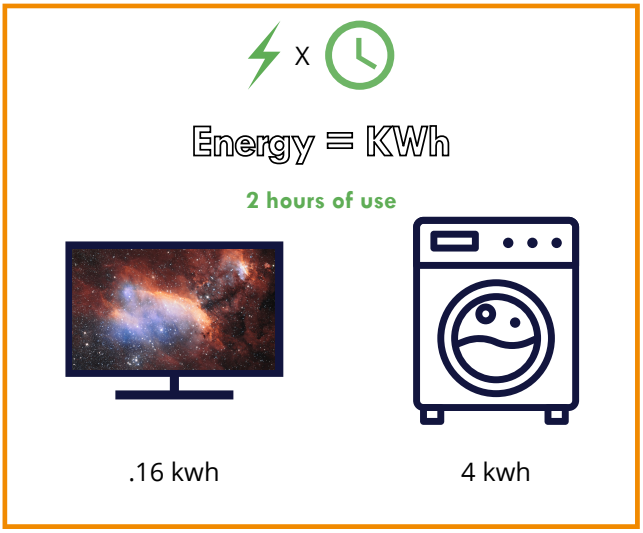
POWER = KW

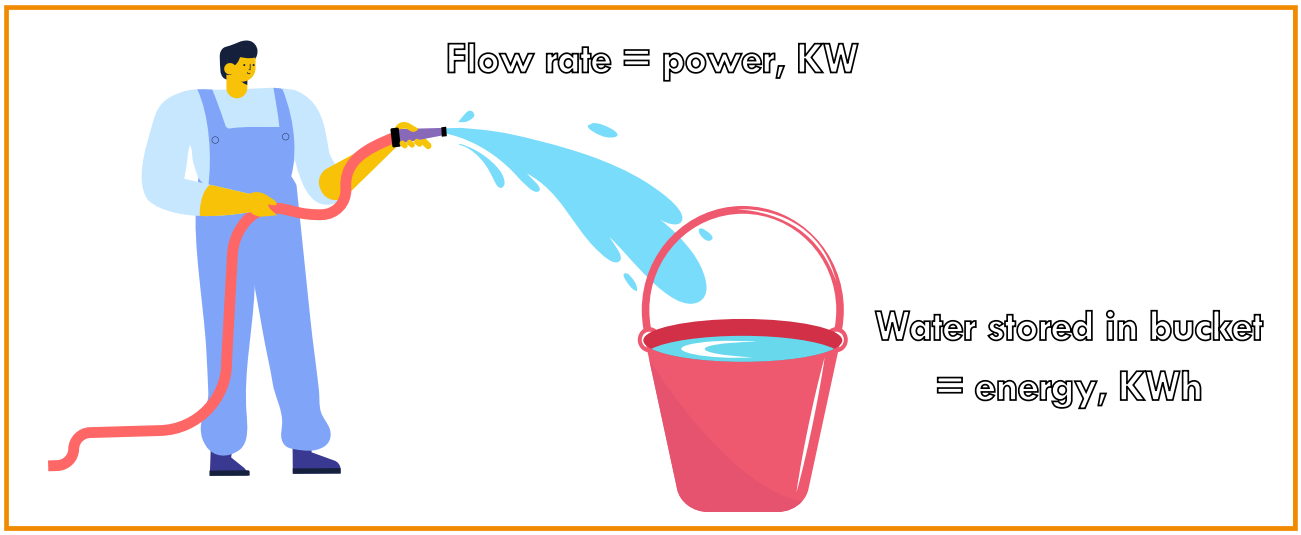
When you see a solar system with an associated kilowatt size – like a 9-kilowatt solar array – this number refers to the maximum possible power output of the system. In other words, it's the nameplate capacity of the system.

We calculate a solar array's kilowatt number from the total solar panels used. Say each solar panel has a wattage rating of 300 watts. If you install 30 solar panels, you'll have a 9000 watt or 9-kilowatt solar system.

If you have a solar energy system, your monitoring will show a fluctuation of power output for the system as the sun rises and falls throughout the day and as the seasons change. Different factors affect the power output of a solar energy system. These factors can include the time of day, time of year, weather, ambient temperature, panel shading, etc.





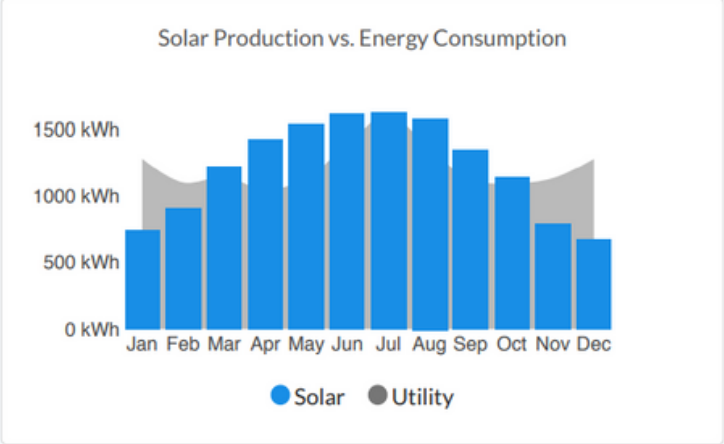


ENERGY = KWH

After understanding that kilowatts equal the power output of a solar energy system, it's important to understand kilowatt-hours. Kilowatt-hours tell the story of how much power a system can produce over a specific timeframe.

A Kilowatt-hour is a measure of power output over time. So, if our 9-kilowatt system produced 9 kilowatts continuously for a whole hour, it produced 9 kilowatt-hours. Using kilowatt-hours, we can draw a more accurate picture of the production of a solar array over time.

Your solar energy system must be sized to offset the kilowatt-hours you typically use at home. Our solar experts know that there are variables to consider when sizing your solar array: weather patterns change, your energy consumption fluctuates as your family grows, or you add an electric vehicle.



That is why a solar consultation is a key step – your Solar Consultant needs to know a lot about your current energy use, available space for solar, and future plans to size a system that will meet your home energy needs for 30+ years.

CHOOSING YOUR EQUIPMENT

An overwhelming number of solar panel brands and models fill the market today. Each claims to be “the best.” Beyond basic differences in power output and aesthetics, brands can vary greatly in quality and durability. Top installers build their reputation by using the highest quality equipment available.

Top installers take the long view and carefully select the equipment they install. They have specialists who study solar panel specifications, researching and testing to find the best in each price category. As importantly, they research each manufacturer’s financial strength and “bankability.” With 25 year solar panel warranties, it is vital to source panels from companies that will be around for the long haul.

Great installers test, compare, and select the best panels for their customers. They can explain why they make those choices, and they offer enduring workmanship warranties.

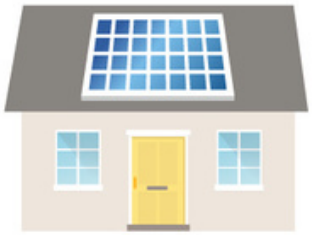
What About Other Important System Components? For a solar system to perform at its best, all components have to be top-quality, including:

- Racking and mounting hardware
- Inverter
- Wiring and Conduits
- Monitoring

WILL SOLAR WORK AT MY HOME?

A solar installer will design your solar energy system by evaluating your site (by visiting or through satellite imagery) and your electric bill to give you an initial review of your solar potential. From there, choices are made as to system size, location and cost.
Here are some guidelines to help you determine whether solar can work well for you:

ORIENTATION & SHADE



Any side of the home with a roof area facing south is ideal.

An experienced installer will not install solar on the North face of your roof.

South-east and south-west facing can also work well.

A house with a roof that faces east-west will also work—panels on the east side will get morning sunlight, those on the west will get afternoon sunlight.

A completely unshaded house is best. Sunlight covers the roof all day.

A lightly-shaded house can work—we can position the solar panels to avoid shade.

A heavily-shaded house will not work for rooftop solar—but we may be able to do a ground-mounted system in that case.

ROOF SLOPE & SHAPE

On a flat roof, solar panels can be easily mounted on racks that tilt them toward the sun.

A 30-degree roof pitch is ideal. We can flush-mount the solar panels for best sun exposure.

A 15-degree pitch works well, too.

Complex roof lines can also work well, depending upon the size and orientation of the different roof facets.

ENERGY OFFSET

A properly-sized solar electric system is a function of 3 factors: How much energy do you typically use? How much available roof space do you have? What is your budget?

A good solar installer will have system designers who optimize these variables find the “sweet spot” for your system—the best size for your available electric needs, space, and budget.

By right-sizing your system, a good installer will improve your return on investment and ensure that you are making the maximum power possible.

1

HOW MUCH ENERGY YOU USE

Your home's energy consumption tell us the maximum amount of how much solar energy you will need to power your home. This is why many installers request a recent electric bill that shows your homes annual usage to create a solar estimate.

2

HOW MUCH SPACE YOU HAVE

How much space do you have on your roof or on the ground for solar? We look for space that is free from shade, has few to no roof obstructions and is not facing northward.

3

YOUR BUDGET

How much do you plan to spend on solar? Do you want premium solar panels or our value option?

SHOULD I GO OFF GRID?

Most early solar pioneers were truly “off-grid.” They relied upon on solar, batteries, and often a generator to power their homes with no connection to the utility grid.

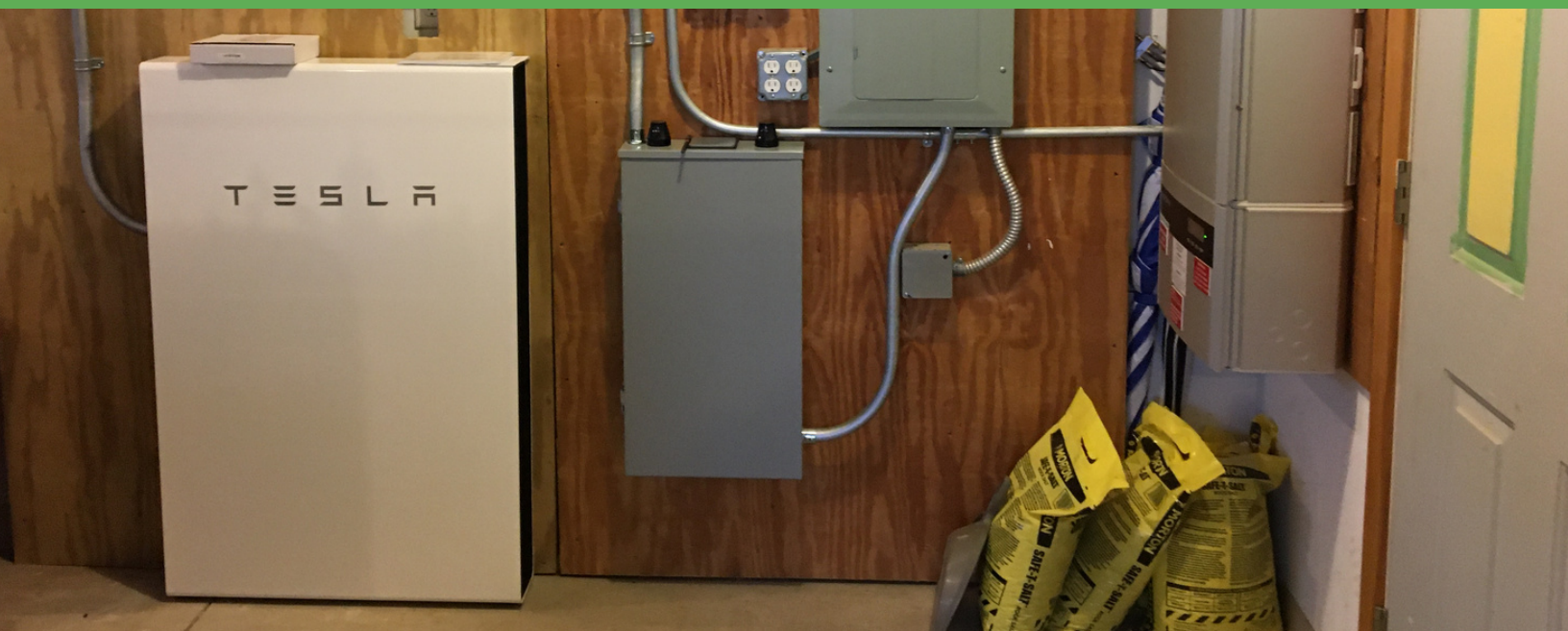
Today, most solar customers keep their grid connection. Here’s why:

- A net-metered system costs less and produces more power
- With a grid connection you “net- meter” and export extra power back to the utility
- That extra power gives you credit for consuming grid power whenever you need it
- An off-grid customer has a “use it or lose it” situation—on sunny days, the extra power may go to waste when loads are met and batteries are already topped off
- Off-grid systems are more costly and require more maintenance

Each of us has our own goals. Protection from utility price hikes and the independence of homemade power from the sun drives most of us to go solar.

Most of our customers don’t live far from power lines. With a grid-tied system, any excess power generated from solar goes back into the grid and helps your neighbors reduce their carbon footprints.

Kokosing Solar doesn’t take you off the grid, but we can get you very close. The good news: you do not have to go off the grid to enjoy the benefits of clean, solar energy!



DOES SOLAR WORK IN A BLACKOUT?

You're generating your own power with your solar energy system, so the lights should stay on when the power goes out, right? Unfortunately, this is not the case with grid-tied solar.

Even though the power is produced with your panels, it's still stored in the public energy grid. When the grid power goes out – so does yours. This keeps your electricity from leaking onto the grid lines and putting line men and women in harm's way when they go to fix the issue.

To get power during times of grid blackout, you will need a grid tied solar system with battery backup. When the grid is up and working, the system functions like a normal grid tied solar system and uses some of the electricity your solar system produces to top off your batteries. In the case of grid failure, the batteries kick in to keep the lights on.

Homeowners who would find the most benefit in a grid tied solar system with battery backup:

- Experience frequent power outages
- Have extreme weather conditions
- Have critical appliances at your home

DOES SOLAR WORK IN THE WINTER?

If you're considering going solar, you might be wondering if cold and snowy Midwestern winters should affect your decision. This is one of the most asked questions we get. Kokosing Solar has 20 years of experience installing systems on all types of buildings across Ohio. To date, our portfolio includes over 1,000 installations in the mid-west. These solar pioneers didn't let our cold winters or snowfall discourage them from going solar, and you shouldn't either!

Can my solar panels produce energy if they are covered in snow? No, a solid covering of snow all but shuts off production. The good news is that overall production loss from the snow is very small when looking at performance on an annual basis. Losing a day of production in January is a fraction of a day in July. Here at Kokosing Solar, our team takes winter's shorter days, snowfall and the orientation of sunlight all into account when estimating the output of your system.

Depending on the tilt of your roof and the slant of your panels, snow will typically slide off on its own. Even in the heart of winter solar panels give off a small amount of heat, which helps to warm and melt the snow. Additionally, snow on the ground can reflect light, amplifying the sunlight absorbed by your solar panels.

Are cold temperatures bad for my solar panels? Unless covered in snow, solar panels are actually more efficient in cold conditions. Like most electronics, solar panels function better at colder temperatures than under intense heat.

HOW TO CHOOSE A SOLAR PARTNER

The most important decision you can make with regards to solar is who builds it. With solar panels becoming commodities, the real key is the quality of the **installation, integrity and longevity of the contractor you choose**. Here are some points of comparison for choosing the best installer & how we stack up:

- How long have they been in business?
- How many projects have they done? Do they provide references?
- When you call those references, what do they say?
- Does your installer have a fully trained & licensed electrician on staff?
- Do their customers tend to stick with them?
- Does the installer have NABCEP certificate holders on staff?
- Are they BBB certified?
- How long is the workmanship warranty?
- Will they tell you if solar will not work well for you (due to roof condition, shading, or other factors)?

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- Is in their 20th year of business
- Over 1,500 projects and references available
- Kokosing has reviews from many happy customers
- Kokosing always has licensed electricians on staff
- Kokosing has many repeat customers & robust referral program
- Kokosing always has NABCEP certified professionals on staff
- Kokosing has an A + BBB rating
- 20 year workmanship warranty
- Kokosing works closely with homeowners to explore all options to go solar at their home. **For some homes, solar simply doesn't make sense. Kokosing tells homeowners when this is the case.*

Now you are an expert at why going solar makes sense for your home, your bank account & the earth. Give Kokosing Solar a call so we can help you take the next step.